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of it in an ague ; that it had never done any harm ; and hardly ever failed to cure. Upon which information, I carried some tincture of myrrh to the woman, who tasted it, and is well assured it is the same liquor the barber gave her in her ague-fit.

I am, with respect,

Your obliged and obedient Servant.

Richard Grindall.

*L. A Letter to the Rev. Tho. Birch, D.D.
Secret. R. S. from John Pringle, M.D.
F.R.S. inclosing Two Papers communicated
to him by Robert Whytt, M.D. F.R.S.*

S I R,

Pallmall-Court, St. James's,
Dec. 10. 1757.

Read Dec. 15.
1757.

ABOUT three weeks ago I put into your hands an extract of a letter, I had then received from Dr. Whytt, containing a postscript to his *Observations on Lord Walpole's Case* ; and slightly mentioning some doubts he had then about the justness of Dr. Springsfeld's experiments with lime-water, from some trials he himself had made, upon reading that gentleman's curious treatise on the extraordinary lithontriptic quality of the waters at Carlsbad in Bohemia. Within these few Days, Dr. Whytt having favoured me with a full account of those experiments, I have herewith send you his paper, in order, if you please, to lay it before

fore the Society ; which the author desires may be done, in case these observations should be judged useful.

The other paper inclosed was sent me by the same hand, to be likewise presented to the Society, as a well-attested instance of the electrical power in the cure of a palsy. To the other testimonies I have subjoined what Dr. Whytt says in his letter to me, by way of strengthening the evidence. I shall only add, that since Mr. Brydone, the author of this account, has omitted telling how long the patient has continued in perfect health since the operation, it appears she must have been well for some months before the date of his paper ; because, before the end of last summer, Dr. Whytt transmitted the same case to me, which I then returned, in order to have it drawn up in a fuller manner, and with other vouchers besides the gentleman, who performed the cure. The Doctor has been so good as to comply with my request, having procured a more ample account of the circumstances from Mr. Brydone, and the attestation of two ministers, besides that of the patient herself.* My difficulties being thus removed,

* After this paper was read at the Society, Dr. Pringle having acquainted Dr. Whytt, that Mr. Patrick Brydone had omitted, in his account, the name of the parish, where the woman lived, the time when she was cured, and also that he had not fully dated his paper ; Dr. Whytt some time after wrote to Dr. Pringle, that having desired Mr. Brydone to furnish him with these particulars, he had received for answer, " That the woman, on whom the cure was performed, had lived all her life in the parish of Coldinghame, and for the last twelve years in that town : That her father had
" died

moved, I believe I may now with freedom offer this very curious case to the attention of the Society.

I am,

S I R,

Your most obedient humble Servant,

John Pringle.

*Postscript to Dr. Whytt's Observations on Lord Walpole's Case *.*

Read Dec. 8, 1757. “ I Do not know, if it be worth while to observe, that lately, in making some experiments with different *calculi*, there was one almost as white as chalk, but of a less hard substance than the others; and which was not in the least degree dissolved or softened by being infused 20 days in oystershell lime-water, but yielded somewhat to a solution of Spanish soap in common water.

“ From this experiment one may conclude, that it is better to prescribe both soap and lime-water

“ died of the palsy seven years ago, after having been subject to that distemper for several years: That the cure was performed in his father's house at Coldinghame, on the 4th, 5th, 6th, and 11th of days of April 1757. a circumstance he had noted down: That as to the date of his paper, presented to the Royal Society, he only recollects it was written some day in the beginning of November last; but as the woman still continued well, he hoped the precise day of the month was no material omission.” This letter to Dr. Whytt is dated, Coldinghame, January 9th, 1758.

* See above, p. 209, & seqq.

“ for the stone, than any one of them alone ; and
 “ that if one of these remedies has failed of giving
 “ relief, the other ought to be tried : for as the
 “ above white *calculus*, which yielded a little to the
 “ solution of soap, resisted lime-water ; so there may
 “ perhaps be others, that are readily dissolved by
 “ lime-water, but little affected by soap.

“ Dr. Springsfeld’s experiments with lime-water
 “ are somehow not just ; for in several *calculi* I
 “ have found the dissolving power of oyster-shell
 “ lime-water above eight times greater than he
 “ makes it.”

*Some Observations on the lithontriptic Virtue
 of the Carlsbad Waters, Lime-water, and
 Soap: In a Letter to Dr. John Pringle,
 F. R. S. from Dr. Robert Whytt, F. R. S.
 and Professor of Medicine in the University
 of Edinburgh.*

S I R,

Read Dec. 15. 1757. FROM the experiments related in Dr.
 Springsfeld’s *Commentatio de præro-
 gativa thermarum Carolinarum, &c.* which you were
 so good as to send me some time ago, it appears,
 that these waters are not only possessed of a very ex-
 traordinary power of dissolving the stone, but that
 in this respect they greatly exceed lime-water.

(A) Thus, Dr. Springsfeld having infused, for 14
 Days, in a heat of 96 degrees of Fahrenheit’s scale,
 three pieces of the same *calculus*, each weighing 30
 grains,

grains, in eggshell lime-water, the Carlsbad water, and in the urine of one who daily drank this last water, renewing these several menstruums every day, he found, on the 15th day, that the *calculus* in the lime-water had lost 1 grain, the *calculus* in the Carlsbad water 6 grains, and that in urine 5 grains.

(B) Again, having divided another *calculus* into four parts, each of which was reduced to 80 grains, he put the first in oystershell lime-water, the second in Carlsbad water, and the third in the urine of a person who drank this water. After 20 days, during which time the menstruums were renewed every day, and kept in a heat of 96 degrees, the dried *calculi* had lost of their weight as follows: the first 3 grains, the second 18 grains, and the third 14 grains.

Altho' I make no doubt that Dr. Springsfeld, who appears to be a man of candour, as well as learning, has faithfully related the event of the experiments, which he made; yet either the lime-water he used must have been very weak, or some other mistake must have happened in his experiments: for in all the numerous trials I made, about 15 years ago, of lime-water, as a solvent for the stone, I always found its dissolving power much greater, than it appears in Dr. Springsfeld's experiments. And as in these trials different urinary stones were used, it can scarcely be imagined, that it was owing to the peculiar hardness of Dr. Springsfeld's *calculi*, that the lime-water made so little impression on them. However, to be still further satisfied of this matter, I made the following experiments.

1. I put a piece of a very hard *calculus*, which I shall call *x*, weighing 80 grains, in oystershell lime-water, renewing the lime-water every day, and keeping it in a heat between 90 and 106 degrees of Fahrenheit's scale. After 20 days, I took out the *calculus*; and having set it by for some days, till it was become quite dry, I brushed away all the rotten part of it, which was reduced to a kind of chalky powder, and found that the undissolved part of it weighed 57 grains.

2. At the same time a piece of another *calculus*, *z*, weighing 15 grains, was, after a like infusion of 20 days in oystershell lime-water, reduced to 10 grains.

3. I put a piece of *z*, weighing 14 grains, in a solution of half an ounce of the internal part of Spanish soap in nine ounces of water, and every third day renewed the solution, which was kept in a heat of about 60 degrees. After 14 days, I found the undissolved part not to exceed 11 grains.

4. A piece of a white chalky *calculus*, *y*, weighing 30 grains, had near 4 grains of its substance dissolved, by being 14 days infused as above in a solution of soap.

From N°. 1. above, compared with Dr. Springsfeld's Exper. (B), it appears, that the dissolving power of oystershell lime-water is to that of the Carlsbad water as 23 to 18, supposing the *calculi* used in these experiments to have been equally easy to dissolve.

N°. 3. compared with Dr. Springsfeld's Exper. (A), shews, that the dissolving power of a solution of the inner part of Spanish soap, in a heat of 60 degrees,
is

is to that of the Carlsbad water, in a heat of 96 degrees, as 15 to 14.

From N^o. 4. compared with (A), the dissolving power of soap is to that of the Carlsbad water only as 4 to 6; but it is probable, that had the solution of soap been kept in a heat of 96 degrees, its dissolving power would, even in this experiment, have nearly equalled that of the Carlsbad water. It may, perhaps, be worth while to observe, that a piece of the white chalky *calculus* of N^o 4. was not in the smallest degree dissolved by lying in lime-water 20 days.

5. In Exper. 19. of my Essay on the Virtue of Lime-water, a piece of a *calculus*, *b*, weighing 31 grains, lost 7 grains by being infused 36 hours, in a heat of above 100 degrees, in very strong oyster-shell lime-water. And in the same water, of a moderate strength, another piece of *b* lost, in the same time, 5 grains.

In this last experiment, the lithontriptic virtue of lime-water appears to be stronger than in N^o. 1. and 2. above; and greatly exceeds that of the Carlsbad water in Dr. Springsfeld's Exper. (A) and (B).

But altho', from what has been said, it appears not only that lime-water, but also a solution of soap, dissolves the stone in close vessels as fast, nay faster, than the *thermæ Carolinæ*; yet these last waters, when the *calculi* were so placed in open vessels, that the water from the fountain might constantly flow along them, effected a much quicker dissolution than lime-water, or even soap-lye, or indeed any known menstruum, except, perhaps, strong spirit of nitre :
for,

for, in the first experiment made by Dr. Springsfeld, a *calculus* of two ounces and a half was, in this manner, quite dissolved in six days. From this experiment, compared with that of Dr. Springsfeld mentioned above (B), it will be found, upon calculation, that the dissolving power of the Carlsbad water, when it is allowed to flow constantly from the fountain along the stone, is nearly 39 times greater than when it is only poured fresh on the *calculus* once a day *. What may have been the reason of this surprising difference of the lithontriptic power of the Carlsbad water in these different circumstances, I will not pretend to say. I think it can scarcely be accounted for from the gentle motion of the water along the surface of the *calculus*. Was it then owing to some very volatile active part, which the water quickly loses, after being taken from the fountain ?

But how great soever the dissolving power of the Carlsbad waters may be, when they issue from the bowels of the earth, yet that they do not communicate a much greater dissolving power to the urine, than lime-water, will appear from comparing the two following experiments.

In Dr. Springsfeld's Exper. (A) above, the urine of a person, who drank the Carlsbad waters, reduced, in 14 days, a piece of *calculus*, weighing 30 grains, to 25 grains. And in an experiment made by Dr. Newcome, now Lord Bishop of Llandaff, who drank four English pints of oyster-shell lime-water

* Vid. Essay on the Virtue of Lime-water, 2d edit. p. 176, 177. daily,

daily, his Lordship's urine reduced, in four months, a piece of *calculus*, weighing 31 grains, to three small bits, weighing in all 6 grains †. Whence it follows, that the dissolving power of his Lordship's urine must have been to the dissolving power of the urine of the person who drank the Carlsbad waters nearly as 35 to 65 ‡. But if we consider, that the *calculus* infused in the urine of the person who drank the Carlsbad waters was kept always in a heat of 96 degrees, while in Dr. Newcome's experiment, which was made during part of the autumn and winter, no artificial heat was used, it will appear probable, that the dissolving power of his Lordship's urine was little inferior to that of the person who drank the Carlsbad waters; for lime-water, in a heat of 96 degrees, dissolves the *calculus* at least twice as fast, as in the common heat of the air in winter. Further, if it be attended to, that the quantity of Carlsbad waters drank every day before dinner is from six to eight lib. while his Lordship only drank four lib. of lime-water in 24 hours, it will follow, that whatever the different dissolving powers of the lime-water and Carlsbad waters may be out of the body, yet the former seems, in proportion to the quantity drank, to communicate at least an equal dissolving power to the urine.

But without presuming to decide certainly, as to the comparative virtue of the Carlsbad waters and lime-water, I shall conclude with observing, that tho' the Carlsbad waters are less disagreeable to the

† Essay on Lime-water, 2d edit. p. 208, &c.

‡ Ibid. p. 176 and 177.

taste, and may be drank in larger quantity, than lime-water, yet this last may be drank equally good in all places, and at all seasons of the year; which is not the case with the Carlsbad waters.

November 30. 1757.

*An Instance of the Electrical Virtue in the
Cure of a Palsy. By Mr. Patrick Bry-
done.*

Read Dec. 15. 1757. **E**Lizabeth Foster, aged 33, in poor circumstances, unmarried, about 15 years ago was seized with a violent nervous fever, accompanied with an asthma, and was so ill, that her life was despaired of. She recovered however from the violence of her distemper, but the sad effects of it remained. For, from this time, she continued in a weakly uncertain state of health till the month of July, 1755, when she was again taken ill of the same kind of fever; and after it went off she was troubled with worse nervous symptoms than ever, ending at last in a paralytic disorder, which sometimes affected the arm, sometimes the leg, of the left side; in such a manner as that these parts, tho' deprived of all motion for the time, yet still retained their sensibility. In this condition she remained till the spring 1756, when unexpectedly she grew much better; but not so far as to get quite rid of her paralytic complaints; which, in cold weather, seldom failed to manifest themselves by a numbness, trembling, sensation of cold, and a loss of motion in the left side.

This

This paralytic tendency made her apprehensive of a more violent attack ; which accordingly soon happened : for, about the end of August, in the same year, her symptoms gradually increased, and in a very short time she lost all motion and sensation in her left side. In this state she continued throughout last winter with the addition of some new complaints ; for now her head shook constantly ; her tongue faltered so much, when she attempted to speak, that she could not articulate a word ; her left eye grew so dim, that she could not distinguish colours with it ; and she was often seized with such an universal coldness and insensibility, that those who saw her at such times scarce knew whether she was dead or alive.

Whilst the woman was in this miserable condition, observing that she had some intermissions, during which she could converse and use her right leg and arm, in one of those intervals I proposed trying to relieve her by the power of electricity. With this view, I got her supported in such a manner as to receive the shocks standing, holding the phial in her right hand, whilst the left was made to touch the gun-barrel. After receiving several very severe shocks, she found herself in better spirits than usual ; said she felt a heat, and a prickling pain, in her left thigh and leg, which gradually spread over all that side ; and after undergoing the operation for a few minutes longer, she cried out, with great joy, that she felt her foot on the ground.

The electrical machine producing such extraordinary effects, the action was continued ; and that day the woman patiently submitted to receive above 200

shocks from it. The consequence was, that the shaking of her head gradually decreased, till it intirely ceased ; that she was able at last to stand without any support ; and on leaving the room quite forgot one of her crutches, and walked to the kitchen with very little assistance from the other. That night she continued to be well and slept better than she had done for several months before, only about midnight she was seized with a faintishness, and took notice of a strong sulphureous taste in her mouth ; but both faintness and that taste went off, upon drinking a little water. Next day, being electrified as before, her strength sensibly increased during the operation, and when that was over she walked easily with a stick, and could lift several pounds weight with her left hand, which had been so long paralytic before. The experiment was repeated on the third day ; by which time she had received in all upwards of 600 severe shocks. She then telling us that she had as much power in the side that had been affected as in the other, we believed it unnecessary to proceed farther as the electricity had already, to all appearance produced a compleat cure. And indeed the patient continued to be well till the Sunday following, *viz.* about three days after the last operation ; but upon going that day to church, she probably caught cold ; for on Monday she complained of a numbness in her left hand and foot ; but, upon being again electrified, every symptom vanished, and she has been perfectly well ever since.

Coldingham, Nov. 1757.

Patrick Brydone.

That

That the above is a true and exact account of my case, and of the late wonderful cure wrought on me, is attested by

Elizabeth Foster.

I was eye witness to the electrical experiments made by my son on Elizabeth Foster, and saw with pleasure their happy effects. By the blessing of God accompanying them, from a weak, miserable, and at sometimes almost an insensible state, she was, in a very short time, restored to health and strength; of which the above is in every respect a true account.

Robert Brydone,
Minister of Coldingham.

Extract of a Letter from Dr. Whytt to Dr. Pringle, relating to this Account: Dated Edinburgh, 1 Dec. 1757.

SOME days ago I had transmitted to me Mr. Brydone's account (inclosed) of the success of the electrical shocks in a paralytic patient, attested by the patient herself, and by Mr. Brydone's father, who is minister at Coldingham, in the shire of Berwick. At the same time I had a letter from the Reverend Mr. Allan, Minister of Eymouth (in the neighbourhood), informing me, that he had examined the patient particularly, and found Mr. Brydone's account to be perfectly true. He further informs me, that he never observed the electrical shock so strong from any machine, as from Mr. Brydone's. It seems, that gentleman has not only applied himself to the study of natural philosophy, but also of medicine.

Robert Whytt.